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MSS. intended for publication and books, etc., intended for review should be sent to the Editor of SCIENCE, Garrison-on-Hudson, N. Y.

THE ENERGIES OF MEN¹

WE habitually hear much nowadays of the difference between structural and functional psychology. I am not sure that I understand the difference, but it probably has something to do with what I have privately been accustomed to distinguish as the analytical and the clinical points of view in psychological observation. Professor Sanford, in a recently published 'Sketch of a Beginner's Course in Psychology,' recommended 'the physician's attitude' in that subject as the thing the teacher should first of all try to impart to the pupil. I fancy that few of you can have read Professor Pierre Janet's masterly works in mental pathology without being struck by the little use he makes of the machinery usually relied on by psychologists, and by his own reliance on conceptions which in the laboratories and in scientific publications we never hear of at all.

Discriminations and associations, the rise and fall of thresholds, impulses and in-

¹Delivered as the presidential address before the American Philosophical Association at Columbia University, December 28, 1906.

hibitions, fatigue,—these are the terms into which our inner life is analyzed by psychologists who are not doctors, and in which, by hook or crook, its aberrations from normality have to be expressed. They can indeed be described, after the fact, in such terms, but always lamely; and everyone must feel how much is unaccounted for, how much left out.

When we turn to Janet's pages, we find entirely other forms of thought employed. Oscillations of the level of mental energy, differences of tension, splittings of consciousness, sentiments of insufficiency and of unreality, substitutions, agitations and anxieties, depersonalizations—such are the elementary conceptions which the total view of his patient's life imposes on this clinical observer. They have little or nothing to do with the usual laboratory categories. Ask a scientific psychologist to predict what symptoms a patient must have when his 'supply of mental energy' diminishes, and he can utter only the word 'fatigue.' He could never predict such consequences as Janet subsumes under his one term 'psychasthenia'—the most bizarre obsessions and agitations, the most complete distortions of the relation between the self and the world.

I do not vouch for Janet's conceptions being valid, and I do not say that the two ways of looking at the mind contradict each other or are mutually incongruous; I simply say that they are incongruent. Each covers so little of our total mental life that they do not even interfere or jostle. Meanwhile the clinical conceptions, though they may be vaguer than the analytic ones, are certainly more adequate, give the concreter picture of the way the whole mind works, and are of far more urgent practical importance. So the 'physician's attitude,' the 'functional psychology,' is assuredly the thing most worthy of general study to-day.

I wish to spend this hour on one conception of functional psychology, a conception never once mentioned or heard of in laboratory circles, but used perhaps more than any other by common, practical men—I mean the conception of the *amount of energy available* for running one's mental and moral operations by. Practically every one knows in his own person the difference between the days when the tide of this energy is high in him and those when it is low, though no one knows exactly what reality the term energy covers when used here, or what its tides, tensions, and levels are in themselves. This vagueness is probably the reason why our scientific psychologists ignore the conception altogether. It undoubtedly connects itself with the energies of the nervous system, but it presents fluctuations that can not easily be translated into neural terms. It offers itself as the notion of a quantity, but its ebbs and floods produce extraordinary qualitative results. To have its level raised is the most important thing that can happen to a man, yet in all my reading I know of no single page or paragraph of a scientific psychology book in which it receives mention—the psychologists have left it to be treated by the moralists and mind-curers and doctors exclusively.

Every one is familiar with the phenomenon of feeling more or less alive on different days. Every one knows on any given day that there are energies slumbering in him which the incitements of that day do not call forth, but which he might display if these were greater. Most of us feel as if we lived habitually with a sort of cloud weighing on us, below our highest notch of clearness in discernment, sureness in reasoning, or firmness in deciding. Compared with what we ought to be, we are only half awake. Our fires are damped, our drafts are checked. We

are making use of only a small part of our possible mental and physical resources. In some persons this sense of being cut off from their rightful resources is extreme, and we then get the formidable neurasthenic and psychasthenic conditions, with life grown into one tissue of impossibilities, that the medical books describe.

Part of the imperfect vitality under which we labor can be explained by scientific psychology. It is the result of the inhibition exerted by one part of our ideas on other parts. Conscience makes cowards of us all. Social conventions prevent us from telling the truth after the fashion of the heroes and heroines of Bernard Shaw. Our scientific respectability keeps us from exercising the mystical portions of our nature freely. If we are doctors, our mind-cure sympathies, if we are mind-curists, our medical sympathies, are tied up. We all know persons who are models of excellence, but who belong to the extreme philistine type of mind. So deadly is their intellectual respectability that we can't converse about certain subjects at all, can't let our minds play over them, can't even mention them in their presence. I have numbered among my dearest friends persons thus inhibited intellectually, with whom I would gladly have been able to talk freely about certain interests of mine, certain authors, say, as Bernard Shaw, Chesterton, Edward Carpenter, H. G. Wells, but it wouldn't do, it made them too uncomfortable, they wouldn't play, I had to be silent. An intellect thus tied down by literality and decorum makes on one the same sort of impression that an able-bodied man would who should habituate himself to do his work with only one of his fingers, locking up the rest of his organism and leaving it unused.

In few of us are functions not tied-up by the exercise of other functions. G. T. Fechner is an extraordinary exception that

proves the rule. He could use his mystical faculties while being scientific. He could be both critically keen and devout. Few scientific men can pray, I imagine. Few can carry on any living commerce with 'God.' Yet many of us are well aware how much freer in many directions and abler our lives would be, were such important forms of energizing not sealed up. There are in everyone potential forms of activity that actually are shunted out from use.

The existence of reservoirs of energy that habitually are not tapped is most familiar to us in the phenomenon of 'second wind.' Ordinarily we stop when we meet the first effective layer, so to call it, of fatigue. We have then walked, played, or worked 'enough,' and desist. That amount of fatigue is an efficacious obstruction, on this side of which our usual life is cast. But if an unusual necessity forces us to press onward, a surprising thing occurs. The fatigue gets worse up to a certain critical point, when gradually or suddenly it passes away, and we are fresher than before. We have evidently tapped a level of new energy, masked until then by the fatigue-obstacle usually obeyed. There may be layer after layer of this experience. A third and a fourth 'wind' may supervene. Mental activity shows the phenomenon as well as physical, and in exceptional cases we may find, beyond the very extremity of fatigue-distress, amounts of ease and power that we never dreamed ourselves to own, sources of strength habitually not taxed at all, because habitually we never push through the obstruction, never pass those early critical points.

When we do pass, what makes us do so? Either some unusual stimulus fills us with emotional excitement, or some unusual idea of necessity induces us to make an extra effort of will. *Excitements, ideas,*

and efforts, in a word, are what carry us over the dam.

In those hyperesthetic conditions which chronic invalidism so often brings in its train, the dam has changed its normal place. The pain-threshold is abnormally near. The slightest functional exercise gives a distress which the patient yields to and stops. In such cases of 'habit-neurosis' a new range of power often comes in consequence of the bullying-treatment; of efforts which the doctor obliges the patient, against his will, to make. First comes the very extremity of distress, then follows unexpected relief. There seems no doubt that we are each and all of us to some extent victims of habit-neurosis. We have to admit the wider potential range and the habitually narrow actual use. We live subject to inhibition by degrees of fatigue which we have come only from habit to obey. Most of us may learn to push the barrier farther off, and to live in perfect comfort on much higher levels of power.

Country people and city people, as a class, illustrate this difference. The rapid rate of life, the number of decisions in an hour, the many things to keep account of, in a busy city man's or woman's life, seem monstrous to a country brother. He doesn't see how we live at all. But settle him in town; and in a year or two, if not too old, he will have trained himself to keep the pace as well as any of us, getting more out of himself in any week than he ever did in ten weeks at home. The physiologists show how one can be in nutritive equilibrium, neither losing nor gaining weight, on astonishingly different quantities of food. So one can be in what I might call 'efficiency-equilibrium' (neither gaining nor losing power when once the equilibrium is reached), on astonishingly different quantities of work, no matter in what dimension the work may be measured.

It may be physical work, intellectual work, moral work, or spiritual work.

Of course there are limits: the trees don't grow into the sky. But the plain fact remains that men the world over possess amounts of resource, which only very exceptional individuals push to their extremes of use.

The excitements that carry us over the usually effective dam are most often the classic emotional ones, love, anger, crowd-contagion, or despair. Life's vicissitudes bring them in abundance. A new position of responsibility, if it do not crush a man, will often, nay, one may say, will usually, show him to be a far stronger creature than was supposed. Even here we are witnessing (some of us admiring, some deploring—I must class myself as admiring) the dynamogenic effects of a very exalted political office upon the energies of an individual who had already manifested a healthy amount of energy before the office came.

Mr. Sydney Olivier has given us a fine fable of the dynamogenic effects of love in a late story called 'The Empire Builder,' in the *Contemporary Review* for May, 1905. A young naval officer falls in love at sight with a missionary's daughter on a lost island, which his ship accidentally touches. From that day onward he must see her again; and he so moves Heaven and earth and the Colonial Office and the Admiralty to get sent there once more, that the island finally is annexed to the empire in consequence of the various fusses he is led to make. People must have been appalled lately in San Francisco to find the stores of bottled up energy and endurance they possessed.

Wars, of course, and shipwrecks, are the great revealers of what men and women are able to do and bear. Cromwell's and Grant's careers are the stock examples of how war will wake a man up. I owe to

Professor Norton's kindness the permission to read to you part of a letter from Colonel Baird-Smith, written shortly after the six weeks' siege of Delhi in 1857, for the victorious issue of which that excellent officer was chiefly to be thanked. He writes as follows:

* * * My poor wife had some reason to think that war and disease between them had left very little of a husband to take under nursing when she got him again. An attack of camp-scurvy had filled my mouth with sores, shaken every joint in my body, and covered me all over with sores and livid spots so that I was marvelously unlovely to look upon. A smart knock on the ankle-joint from the splinter of a shell that burst in my face, in itself a mere bagatelle of a wound, had been of necessity neglected under the pressing and incessant calls upon me, and had grown worse and worse till the whole foot below the ankle became a black mass and seemed to threaten mortification. I insisted however on being allowed to use it till the place was taken, mortification or no; and though the pain was sometimes horrible, I carried my point and kept up to the last. On the day after the assault I had an unlucky fall on some bad ground, and it was an open question for a day or two whether I hadn't broken my arm at the elbow. Fortunately it turned out to be only a very severe sprain, but I am still conscious of the wrench it gave me. To crown the whole pleasant catalogue, I was worn to a shadow by a constant diarrhoea, and consumed as much opium as would have done credit to my father-in-law.² However, thank God I have a good share of Tapleyism in me and come out strong under difficulties. I think I may confidently say that no man ever saw me out of heart, or ever heard one croaking word from me even when our prospects were gloomiest. We were sadly scourged by the cholera and it was almost appalling to me to find that out of twenty-seven officers present, I could only muster fifteen for the operations of the attack. However, it was done, and after it was done came the collapse. Don't be horrified when I tell you that for the whole of the actual siege, and in truth for some little time before, I almost lived on brandy. Appetite for food I had none, but I forced myself to eat just sufficient to sustain life, and I had an incessant craving for brandy as the strongest stimulant I could get. Strange to say,

² [Thomas De Quincey.—W. J.]

I was quite unconscious of its affecting me in the slightest degree. *The excitement of the work was so great that no lesser one seemed to have any chance against it, and I certainly never found my intellect clearer or my nerves stronger in my life.* It was only my wretched body that was weak, and the moment the real work was done by our becoming complete masters of Delhi, I broke down without delay and discovered that if I wished to live I must continue no longer the system that had kept me up until the crisis was past. With it passed away as if in a moment all desire to stimulate, and a perfect loathing of my late staff of life took possession of me.

Such experiences show how profound is the alteration in the manner in which, under excitement, our organism will sometimes perform its physiological work. The metabolisms become different when the reserves have to be used, and for weeks and months the deeper use may go on.

Morbid cases, here as elsewhere, lay the normal machinery bare. In the first number of Dr. Morton Prince's *Journal of Abnormal Psychology*, Dr. Janet has discussed five cases of morbid impulse, with an explanation that is precious for my present point of view. One is a girl who eats, eats, eats, all day. Another walks, walks, walks, and gets her food from an automobile that escorts her. Another is a dipsomaniac. A fourth pulls out her hair. A fifth wounds her flesh and burns her skin. Hitherto such freaks of impulse have received Greek names (as bulimia, dromomania, etc.) and been scientifically disposed of as 'episodic syndromata of hereditary degeneration.' But it turns out that Janet's cases are all what he calls psychasthenics, or victims of a chronic sense of weakness, torpor, lethargy, fatigue, insufficiency, impossibility, unreality, and powerlessness of will; and that in each and all of them the particular activity pursued, deleterious though it be, has the temporary result of raising the sense of vitality and making the patient feel alive again. These things reanimate; they

would reanimate *us*; but it happens that in each patient the particular freak-activity chosen is the only thing that does reanimate; and therein lies the morbid state. The way to treat such persons is to discover to them more usual and useful ways of throwing their stores of vital energy into gear.

Colonel Baird-Smith, needing to draw on altogether extraordinary stores of energy, found that brandy and opium were ways of throwing them into gear.

Such cases are humanly typical. We are all to some degree oppressed, unfree. We don't come to our own. It is there, but we don't get at it. The threshold must be made to shift. Then many of us find that an eccentric activity—a 'spree,' say—relieves. There is no doubt that to some men sprees and excesses of almost any kind are medicinal, temporarily at any rate, in spite of what the moralists and doctors say.

But when the normal tasks and stimulations of life don't put a man's deeper levels of energy on tap, and he requires distinctly deleterious excitements, his constitution verges on the abnormal. The normal opener of deeper and deeper levels of energy is the will. The difficulty is to use it; to make the effort which the word volition implies. But if we *do* make it (or if a god, though he were only the god Chance, makes it through us), it will act dynamogenically on us for a month. It is notorious that a single successful effort of moral volition, such as saying 'no' to some habitual temptation, or performing some courageous act, will launch a man on a higher level of energy for days and weeks, will give him a new range of power.

The emotions and excitements due to usual situations are the usual inciters of the will. But these act discontinuously; and in the intervals the shallower levels of

life tend to close in and shut us off. Accordingly the best practical knowers of the human soul have invented the thing known as methodical ascetic discipline to keep the deeper levels constantly in reach. Beginning with easy tasks, passing to harder ones, and exercising day by day, it is, I believe, admitted that disciples of asceticism can reach very high levels of freedom and power of will.

Ignatius Loyola's spiritual exercises must have produced this result in innumerable devotees. But the most venerable ascetic system, and the one whose results have the most voluminous experimental corroboration is undoubtedly the Yoga system in Hindostan. From time immemorial, by Hatha Yoga, Raja Yoga, Karma Yoga, or whatever code of practise it might be, Hindu aspirants to perfection have trained themselves, month in and out, for years. The result claimed, and certainly in many cases accorded by impartial judges, is strength of character, personal power, unshakability of soul. But it is not easy to disentangle fact from tradition in Hindu affairs. So I am glad to have a European friend who has submitted to Hatha Yoga training, and whose account of the results I am privileged to quote. I think you will appreciate the light it throws on the question of our unused reservoirs of power.

My friend is an extraordinarily gifted man, both morally and intellectually, but has an instable nervous system, and for many years has lived in a circular process of alternate lethargy and over-animation: something like three weeks of extreme activity, and then a week of prostration in bed. An unpromising condition, which the best specialists in Europe had failed to relieve; so he tried Hatha Yoga, partly out of curiosity, and partly with a sort of desperate hope. What follows is a short ex-

tract from a letter sixty pages long which he addressed me a year ago:

Thus I decided to follow Vivekananda's advice: "Practise hard: whether you live or die by it doesn't matter." My improvised chela and I began with starvation. I do not know whether you did try it ever * * * but voluntary starvation is very different from involuntary, and implies more temptations. We reduced first our meals to twice a day and then to once a day. The best authorities agree that in order to control the body fasting is essential, and even in the Gospel the worst spirits are said to obey only those who fast and pray. We reduced very much the amount of food, disregarding chemical theories about the need of albumen, sometimes living on olive oil and bread; or on fruits alone; or on milk and rice; in very small quantities—much less than I formerly ate at one meal. I began to get lighter every day, and lost 20 pounds in a few weeks; but this could not stop such a desperate undertaking * * * rather starve than live as a slave! Then besides we practised *asana* or postures, breaking almost our limbs. Try to sit down on the floor and to kiss your knees without bending them, or to join your hands on the usually unapproachable upper part of your back, or to bring the toe of your right foot to your left ear without bending the knees * * * these are easy samples of posture for a Yogi.

All the time also breathing exercises: keeping the breath in and out up to two minutes, breathing in different rhythms and positions. Also very much prayer and Roman Catholic practises combined with the Yoga, in order to leave nothing untried and to be protected against the tricks of Hindu devils! Then concentration of thought on different parts of the body, and on the processes going on within them. Exclusion of all emotions, dry logical reading, as intellectual diet, and working out logical problems. * * * I wrote a Handbook of Logic as a *Nebenprodukt* of the whole experiment.³

After a few weeks I broke down and had to interrupt everything, in a worse state of prostration than ever. * * * My younger chela went on unshaken by my fate; and as soon as I arose from bed I tried again, decided to fight it out, even feeling a kind of determination such as I had never felt before, a certain absolute will of victory at any price and faith in it. Whether it is my own

merit or a divine grace, I can not judge for certain, but I prefer to admit the latter. I had been ill for seven years, and some people say this is a term for many punishments. However base and vile a sinner I had been, perhaps my sins were about to be forgiven, and Yoga was only an exterior opportunity, an object for concentration of will. I do not yet pretend to explain much of what I have gone through, but the fact is that since I arose from bed on August 20, no new crisis of prostration came again, and I have now the strongest conviction that no crisis will ever return. If you consider that for the past years there has not been a single month without this lethargy, you will grant that even to an outside observer four successive months of increasing health are an objective test. In this time I underwent very severe penances, reducing sleep and food and increasing the task of work and exercise. My intuition was developed by these practises: there came a sense of certainty, never known before, as to the things needed by the body and the mind, and the body came to obey like a wild horse tamed. Also the mind learned to obey, and the current of thought and feeling was shaped according to my will. I mastered sleep and hunger, and the flights of thought, and came to know a peace never known before, an inner rhythm of unison with a deeper rhythm above or beyond. Personal wishes ceased, and the consciousness of being the instrument of a superior power arose. A calm certainty of indubitable success in every undertaking imparts great and real power. I often guessed the thoughts of my companion * * * we observed generally the greatest isolation and silence. We both felt an unspeakable joy in the simplest natural impressions, light, air, landscape, any kind of simplest food; and above everything in rhythmical respiration, which produces a state of mind without thought or feeling, and still very intense, indescribable.

These results began to be more evident in the fourth month of uninterrupted training. We felt quite happy, never tired, sleeping only from 8 P.M. to midnight, and rising with joy from our sleep to another day's work of study and exercise. * * *

I am now in Palermo, and have had to neglect the exercises in the last few days, but I feel as fresh as if I were in full training and see the sunny side of all things. I am not in a hurry, rushing to complete —.

And here my friend mentions a certain life-work of his own about which I had

³This handbook was published last March.—W. J.

better be silent. He goes on to analyze the exercises and their effects in an extremely practical way, but at too great length for me to entertain you with. Repetition, alteration, periodicity, parallelism (or the association of the idea of some desirable vital or spiritual effect with each movement), etc., are laws which he deems highly important. "I am sure," he continues, "that everybody who is able to concentrate thought and will, and to eliminate superfluous emotions, sooner or later becomes a master of his body and can overcome every kind of illness. This is the truth at the bottom of all mind-cures. Our thoughts have a plastic power over the body."

You will be relieved, I doubt not, to hear my excentric correspondent here make connection at last with something you know by heart, namely, 'suggestive therapeutics.' Call his whole performance, if you like, an experiment in methodical self-suggestion. That only makes it more valuable as an illustration of what I wish to impress in as many ways as possible upon your minds, that we habitually live inside our limits of power. Suggestion, especially under hypnosis, is now universally recognized as a means, exceptionally successful in certain persons, of concentrating consciousness, and, in others, of influencing their bodies' states. It throws into gear energies of imagination, of will, and of mental influence over physiological processes, that usually lie dormant, and that can only be thrown into gear at all in chosen subjects. It is, in short, dynamogenic; and the cheapest terms in which to deal with our amateur Yogi's experience is to call it auto-suggestive.

I wrote to him that I couldn't possibly attribute any sacramental value to the particular Hatha Yoga processes, the postures, breathings, fastings and the like, and that they seemed to me but so many manners,

available in his case and his chela's, but not for everybody, of breaking through the barriers which life's routine had concreted round the deeper strata of the will, and gradually bringing its unused energies into action.

He replied as follows:

You are quite right that the Yoga exercises are nothing else than a methodical way of increasing our will. Because we are unable to will at once the most difficult things, we must imagine steps leading to them. Breathing being the easiest of the bodily activities, it is very natural that it offers a good scope for exercise of will. The control of thought could be gained without breathing-discipline, but it is simply easier to control thought simultaneously with the control of breath. Anyone who can think clearly and persistently of one thing needs not breathing exercises. You are quite right that we are not using all our power and that we often learn how much we *can* only when we *must*. * * * The power that we do not use up completely can be brought [more and more] into use by what we call *faith*. Faith is like the manometer of the will, registering its pressure. If I could believe that I can levitate, I could do it. But I can not believe, and therefore I am clumsily sticking to earth. * * * Now this faith, this power of credulity, can be educated by small efforts. I can breathe at the rate of say twelve times a minute. I can easily believe that I can breathe ten times a minute. When I have accustomed myself to breathe ten times a minute, I learn to believe it will be easy to breathe six times a minute. Thus I have actually learned to breathe at the rate of once a minute. How far I shall progress I do not know. * * * The Yogi goes on in his activity in an even way, without fits of too much or too little, and he is eliminating more and more every unrest, every worry—growing into the infinite by regular training, by small additions to a task which has grown familiar. * * * But you are quite right that religious-crises, love-crises, indignation-crises, may awaken in a very short time powers similar to those reached by years of patient Yoga practise. * * * The Hindus themselves admit that Samadhi can be reached in many ways and with complete disregard of every physical training.

Allowance made for every enthusiasm and exaggeration, there can be no doubt of my

friend's regeneration—relatively, at any rate. The second letter, written six months later than the first (ten months after beginning Yoga practise, therefore), says the improvement holds good. He has undergone material trials with indifference, traveled third-class on Mediterranean steamers, and fourth-class on African trains, living with the poorest Arabs and sharing their unaccustomed food, all with equanimity. His devotion to certain interests has been put to heavy strain, and nothing is more remarkable to me than the changed moral tone with which he reports the situation. Compared with certain earlier letters, these read as if written by a different man, patient and reasonable instead of vehement, self-subordinating instead of imperious. The new tone persists in a communication received only a fortnight ago (fourteen months after beginning training)—there is, in fact, no doubt that profound modification has occurred in the running of his mental machinery. The gearing has changed, and his will is available otherwise than it was. Available without any new ideas, beliefs, or emotions, so far as I can make out, having been implanted in him. He is simply more balanced where he was more unbalanced.

You will remember that he speaks of faith, calling it a 'manometer' of the will. It sounds more natural to call our will the manometer of our faiths. Ideas set free beliefs, and the beliefs set free our wills (I use these terms with no pretension to be 'psychological'), so the will-acts register the faith-pressure within. Therefore, having considered the liberation of our stored-up energy by emotional excitements and by efforts, whether methodical or unmethodical, I must now say a word about *ideas* as our third great dynamogenic agent. Ideas contradict other ideas and keep us from believing them. An idea that thus

negates a first idea may itself in turn be negated by a third idea, and the first idea may thus regain its natural influence over our belief and determine our behavior. Our philosophic and religious development proceeds thus by credulities, negations and the negating of negations.

But whether for arousing or for stopping belief, ideas may fail to be efficacious, just as a wire at one time alive with electricity, may at another time be dead. Here our insight into causes fails us, and we can only note results in general terms. In general, whether a given idea shall be a live idea, depends more on the person into whose mind it is injected than on the idea itself. The whole history of 'suggestion' opens out here. Which are the suggestive ideas for this person, and which for that? Beside the susceptibilities determined by one's education and by one's original peculiarities of character, there are lines along which men simply as men tend to be inflammable by ideas. As certain objects naturally awaken love, anger, or cupidity, so certain ideas naturally awaken the energies of loyalty, courage, endurance, or devotion. When these ideas are effective in an individual's life, their effect is often very great indeed. They may transfigure it, unlocking innumerable powers which, but for the idea, would never have come into play. 'Fatherland,' 'The Union,' 'Holy Church,' the 'Monroe Doctrine,' 'Truth,' 'Science,' 'Liberty,' Garibaldi's phrase 'Rome or Death,' etc., are so many examples of energy-releasing abstract ideas. The *social* nature of all such phrases is an essential factor of their dynamic power. They are forces of detent in situations in which no other force produces equivalent effects, and each is a force of detent only in a specific group of men.

The memory that an oath or vow has been made will nerve one to abstinences and efforts otherwise impossible: witness

the 'pledge' in the history of the temperance movement. A mere promise to his sweetheart will clean up a youth's life all over—at any rate for a time. For such effects an educated susceptibility is required. The idea of one's 'honour,' for example, unlocks energy only in those who have had the education of a gentleman, so called.

That delightful being, Prince Pueckler-Muskau, writes to his wife from England that he has invented "a sort of artificial resolution respecting things that are difficult of performance." "My device," he says, "is this: I give my word of honour most solemnly to myself to do or to leave undone this or that. I am of course extremely cautious in the use of this expedient, but when once the word is given, even though I afterwards think I have been precipitate or mistaken, I hold it to be perfectly irrevocable, whatever inconveniences I foresee likely to result. If I were capable of breaking my word after such mature consideration, I should lose all respect for myself—and what man of sense would not prefer death to such an alternative? * * * When the mysterious formula is pronounced, no alteration in my own views, nothing short of physical impossibility, must, for the welfare of my soul, alter my will. * * * I find something very satisfactory in the thought that man has the power of framing such props and weapons out of the most trivial materials, indeed out of nothing, merely by the force of his will, which thereby truly deserves the name of omnipotent."⁴

Conversions, whether they be political, scientific, philosophic, or religious, form another way in which bound energies are let loose. They unify, and put a stop to ancient mental interferences. The result is freedom, and often a great enlargement
 4 "Tour in England, Ireland and France," Philadelphia, 1833, p. 435.

of power. A belief that thus settles upon an individual always acts as a challenge to his will. But, for the particular challenge to operate, he must be the right challengee. In religious conversions we have so fine an adjustment that the idea may be in the mind of the challengee for years before it exerts effects; and why it should do so then is often so far from obvious that the event is taken for a miracle of grace, and not a natural occurrence. Whatever it is, it may be a highwater mark of energy, in which 'noes,' once impossible, are easy, and in which a new range of 'yesses' gain the right of way.

We are just now witnessing—but our scientific education has unfitted most of us for comprehending the phenomenon—a very copious unlocking of energies by ideas, in the persons of those converts to 'New Thought,' 'Christian Science,' 'Metaphysical Healing,' or other forms of spiritual philosophy, who are so numerous among us to-day. The ideas here are healthy-minded and optimistic; and it is quite obvious that a wave of religious activity, analogous in some respects to the spread of early Christianity, Buddhism and Mohammedanism is passing over our American world. The common feature of these optimistic faiths is that they all tend to the suppression of what Mr. Horace Fletcher has termed 'fearthought.' Fearthought he defines as 'the self-suggestion of inferiority'; so that one may say that these systems all operate by the suggestion of power. And the power, small or great, comes in various shapes to the individual, power, as he will tell you, not to 'mind' things that used to vex him, power to concentrate his mind, good cheer, good temper; in short, to put it mildly, a firmer, more elastic moral tone. The most genuinely saintly person I have ever known is a friend of mine now suffering from cancer of the breast. I do not assume to judge

of the wisdom or unwisdom of her disobedience to the doctors, and I cite her here solely as an example of what ideas can do. Her ideas have kept her a practically well woman for months after she should have given up and gone to bed. They have annulled all pain and weakness and given her a cheerful active life, unusually beneficent to others to whom she has afforded help.

How far the mind-cure movement is destined to extend its influence, or what intellectual modifications it may yet undergo, no one can foretell. Being a religious movement, it will certainly outstrip the purviews of its rationalist critics, such as we here may be supposed to be.

I have thus brought a pretty wide induction to bear upon my thesis, and it appears to hold good. The human individual lives usually far within his limits; he possesses powers of various sorts which he habitually fails to use. He energizes below his maximum, and he behaves below his optimum. In elementary faculty, in co-ordination, in power of inhibition and control, in every conceivable way, his life is contracted like the field of vision of an hysteric subject—but with less excuse, for the poor hysteric is diseased, while in the rest of us it is only an inveterate *habit*—the habit of inferiority to our full self—that is bad.

Expressed in this vague manner, everyone must admit my thesis to be true. The terms have to remain vague; for though every man or woman born knows what is meant by such phrases as having a good vital tone, a high tide of spirits, an elastic temper, as living energetically, working easily, deciding firmly, and the like, we should all be put to our trumps if asked to explain in terms of scientific psychology just what such expressions mean. We can draw some child-like psychophysical diagrams, and that is all. In physics the con-

ception of 'energy' is perfectly defined. It is correlated with the conception of 'work.' But mental work and moral work, although we can not live without talking about them, are terms as yet hardly analyzed, and doubtless mean several heterogeneous elementary things. Our muscular work is a voluminous physical quantity, but our ideas and volitions are minute forces of release, and by 'work' here we mean the substitution of higher *kinds* for lower *kinds* of detent. Higher and lower here are qualitative terms, not translatable immediately into quantities, unless indeed they should prove to mean newer or older forms of cerebral organization, and unless newer should then prove to mean cortically more superficial, older, cortically more deep. Some anatomists, as you know, have pretended this; but it is obvious that the intuitive or popular idea of mental work, fundamental and absolutely indispensable as it is in our lives, possesses no degree whatever of scientific clearness to-day.

Here, then, is the first problem that emerges from our study. Can any one of us refine upon the conceptions of mental work and mental energy, so as later to be able to throw some definitely analytic light on what we mean by 'having a more elastic moral tone,' or by 'using higher levels of power and will'? I imagine that we may have to wait long before progress in this direction is made. The problem is too homely; one doesn't see just how to get in the electric keys and revolving drums that alone make psychology scientific to-day.

My fellow-pragmatist in Florence, G. Papini, has adopted a new conception of philosophy. He calls it the *doctrine of action* in the widest sense, the study of all human powers and means (among which latter, *truths* of every kind whatsoever figure, of course, in the first rank). From this point of view philosophy is a *prag-*

matic, comprehending, as tributary departments of itself, the old disciplines of logic, metaphysic, physic and ethic.

And here, after our first problem, two other problems burst upon our view. My belief that these two problems form a program of work well worthy of the attention of a body as learned and earnest as this audience, is, in fact, what has determined me to choose this subject, and to drag you through so many familiar facts during the hour that has sped.

The first of the two problems is *that of our powers*, the second *that of our means of unlocking them or getting at them*. We ought somehow to get a topographic survey made of the limits of human power in every conceivable direction, something like an ophthalmologist's chart of the limits of the human field of vision; and we ought then to construct a methodical inventory of the paths of access, or keys, differing with the diverse types of individual, to the different kinds of power. This would be an absolutely concrete study, to be carried on by using historical and biographical material mainly. The limits of power must be limits that have been realized in actual persons, and the various ways of unlocking the reserves of power must have been exemplified in individual lives. Laboratory experimentation can play but a small part. Your psychologist's *Versuchsthier*, outside of hypnosis, can never be called on to tax his energies in ways as extreme as those which the emergencies of life will force on him.

So here is a program of concrete individual psychology, at which anyone in some measure may work. It is replete with interesting facts, and points to practical issues superior in importance to anything we know. I urge it therefore upon your consideration. In some shape we have all worked at it in a more or less blind and

fragmentary way; yet before Papini mentioned it I had never thought of it, or heard it broached by anyone, in the generalized form of a program such as I now suggest, a program that might with proper care be made to cover the whole field of psychology, and might show us parts of it in a very fresh light.

It is just the generalizing of the problem that seems to me to make so strong an appeal. I hope that in some of you the conception may unlock unused reservoirs of investigating power.

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THE EXPANSION OF PHYSIOLOGY¹

Looking forward into the far future, we may perhaps dimly discern the day when morphology and physiology will again join hands * * * but that day is as yet most distant.

WHEN Dr. Michael Foster, the eminent physiologist, was writing the lines quoted above, the two grand divisions of biology to which he refers seemed separated as if by a great gulf. In England and America morphology was the reigning favorite and in the higher institutions of learning physiology as such hardly existed. Both zoology and botany had come almost everywhere to mean morphology, and morphological problems were the popular themes of the day. Even in medical schools, physiology was as yet generally denied an independent existence, being commonly appended to or combined with the chair of anatomy, *i. e.*, one of morphology.

Dr. Foster was writing in the early eighties, and those who like myself can recall the conditions of biological teaching and research at that time will testify that his words were justified. It is true that a

¹ Address of the vice-president and chairman of Section K—Physiology and Experimental Medicine, New York meeting, 1906.